

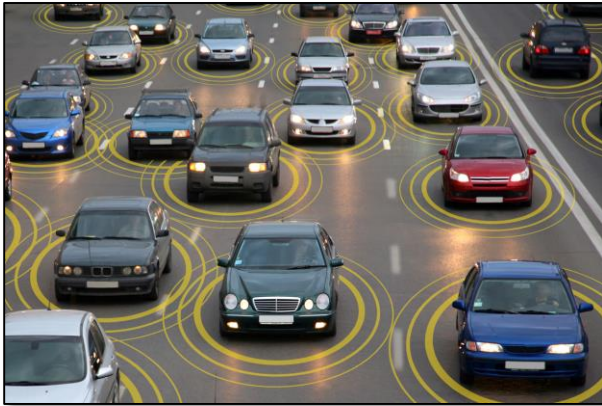


# Automated and Connected Vehicles

*What can NC do to develop CAV industry?*

# The future of Transportation is...

**A**utomated



**C**onnected



**E**lectric



**S**hared





# Where is NC on CAVs, 2016?



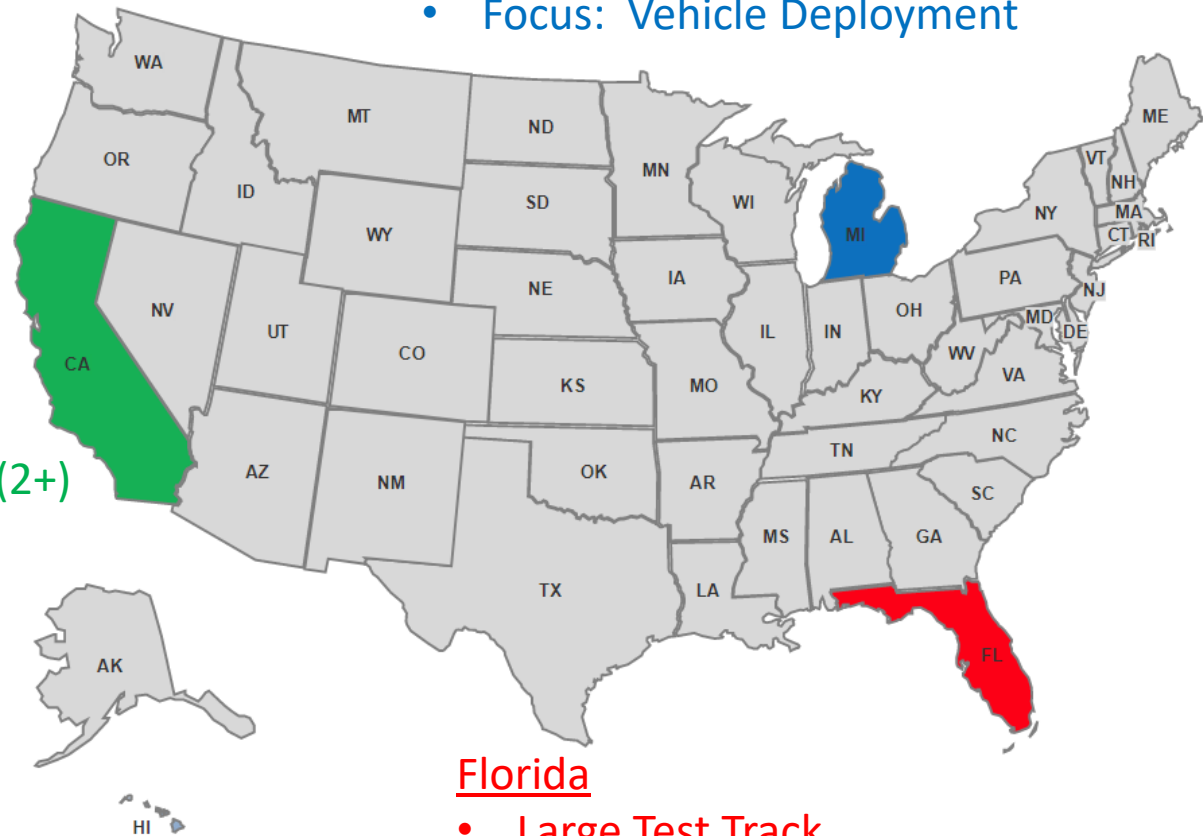
Figure 2. CAV Test Beds, Projects, and Plans Across the Country, March 2016



# Key States and Activity

## Michigan

- Large Test Tracks (2)
- Manufacturer and P3 Led
- Focus: Vehicle Deployment



## California

- Large Test Tracks (2+)
- Municipal Led
- Focus: Software Development/IT

## Florida

- Large Test Track
- DOT and Turnpike Led
- Focus: Implementation

# Transit

- Types
  - PRT
  - Shuttle
- Applications
  - State Fair
  - Tourist Areas (Beaches/Mountains)
  - Retirement Communities
  - Universities
  - Downtown
  - Airports
  - Business park (SAS, IBM, RTI, etc.)
  - Military Base



# Freight

- Types
  - Semi-Truck
  - Ports
  - Rail
- Applications
  - Savings on labor
  - Fuel savings with platooning
  - Longer drive times
  - Port access control and automation
  - Automated rail systems





# Passenger Car

- Types
  - Personal
  - Shared
- Applications
  - Central Fleet
  - Individually Owned
  - Community Car Share





# CAV Test Tracks

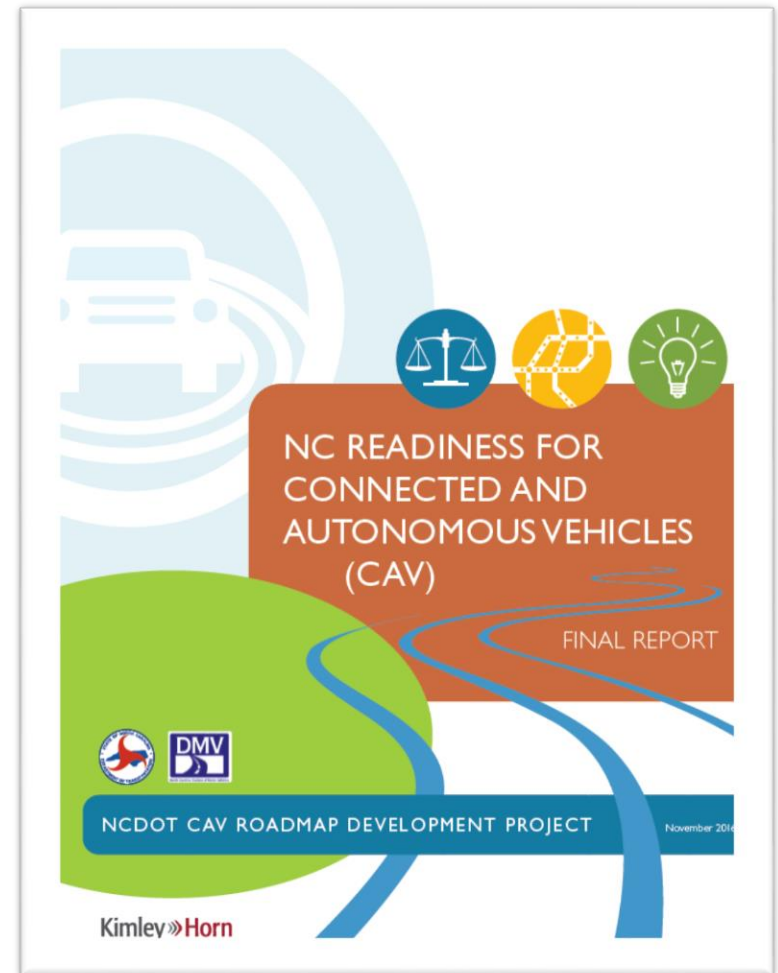


How can NC fit into this  
space?

# NCDOT CAV Roadmap


Delivered November 2016

- A. Group Structure and Organization
- B. Political Leadership Engagement
- C. Changes to Laws and Motor Vehicle Codes
- D. Long-Range Transportation Plans
- E. Mobility and Access Improvements
- F. Pilot Projects and Research**
- G. Outreach/In-Reach Strategy**





# NC CAV Roadmap, Section F-3

 <p><b>Activity owner:</b> CAV Program Manager, partnered with the Business Working Group Chair</p> <p><b>Goal:</b> Establish a CAV Research Consortium</p> <p><b>Schedule:</b> TBD; likely more than 1 year</p> <p><b>Budget:</b> TBD; ~3 person-months internal effort</p>	<p><b>F-3: Develop a Statewide University and Industry Consortium on CAV Research</b></p> <p>Just 10 years ago, Insight Racing from North Carolina State University competed in the DARPA Grand Challenge.<sup>51</sup> The University of North Carolina at Chapel Hill recently hosted a symposium on AV issues. EcoPRT is being developed at NC State. Other university resources across the state have interest in CV and AV technologies. The State could promote a collaborative cross-university consortium to further CAV technology, policy, and infrastructure research in NC. Some seed funding would be necessary to energize the research efforts and further collaboration in an NC-centric effort. Identify private funding sources from local NC businesses along with national and international businesses with a strong presence in NC to contribute to the consortium.</p>
---	---

- State Promotion of CAV
- Seed Funding
- Program Manager
- Business Representation
- University Consortium
- Collaboration
- Private Funding Sources

# NC CAV Consortium

## Pillar 1: CAV Statewide Coordination



# NC CAV Consortium

## Pillar 2: Cutting-Edge Research

- (A) What are the licensing impacts for Level 5 (full) automation?
- (C) How do changes in transportation affect our city infrastructure needs? (connectivity, parking, charging, etc.)?
- (E) What is the impact on gas tax revenue?
- (S) What is the impact of centralized vehicle fleets on registration fees?

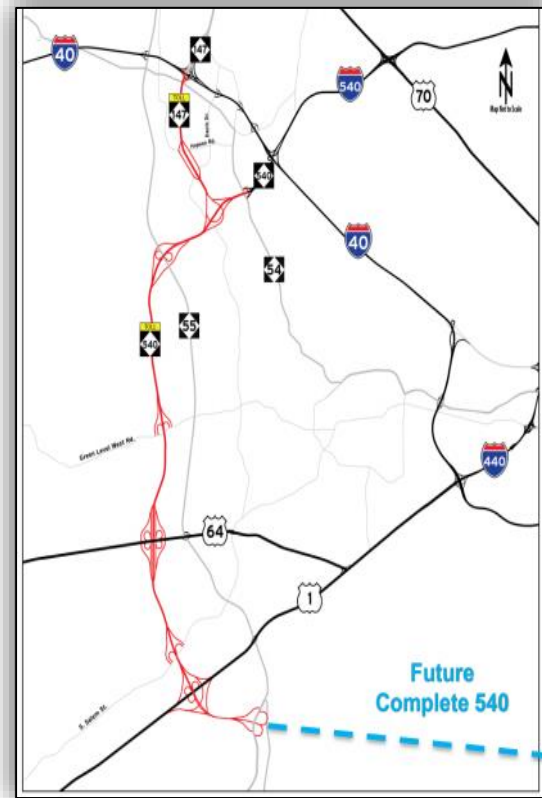


# NC CAV Consortium

## Pillar 3: Infrastructure Improvements

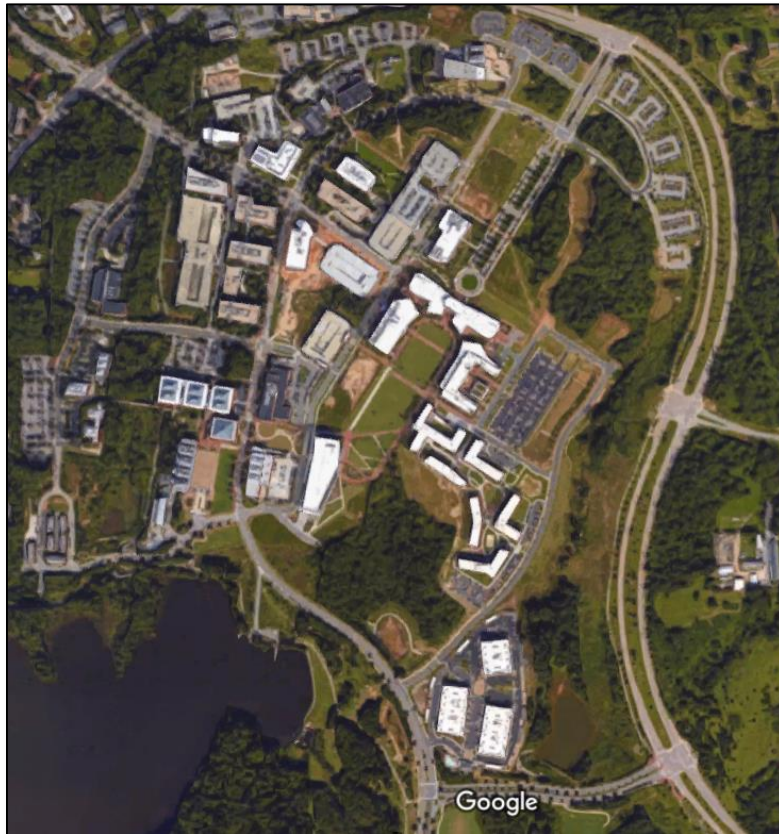


NCCAR  
Roanoke Rapids



AVPG & NC-55  
Raleigh/Durham

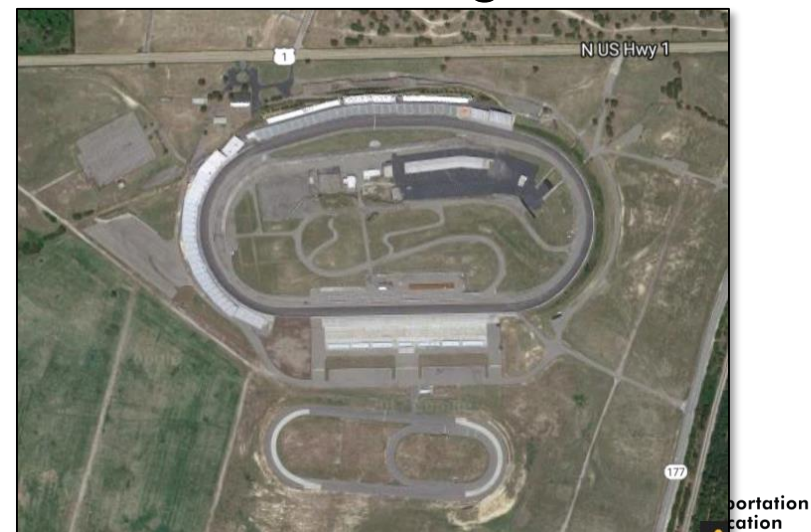
## “Centmesh” NCSU Campus Raleigh



## NCSHP Training Facility Raleigh

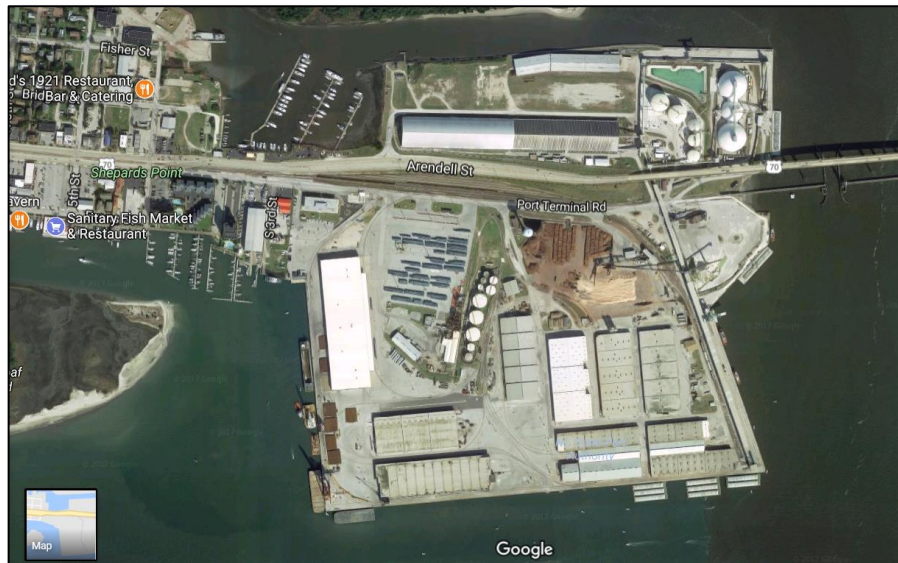


## Racetracks Charlotte, Rockingham, etc.

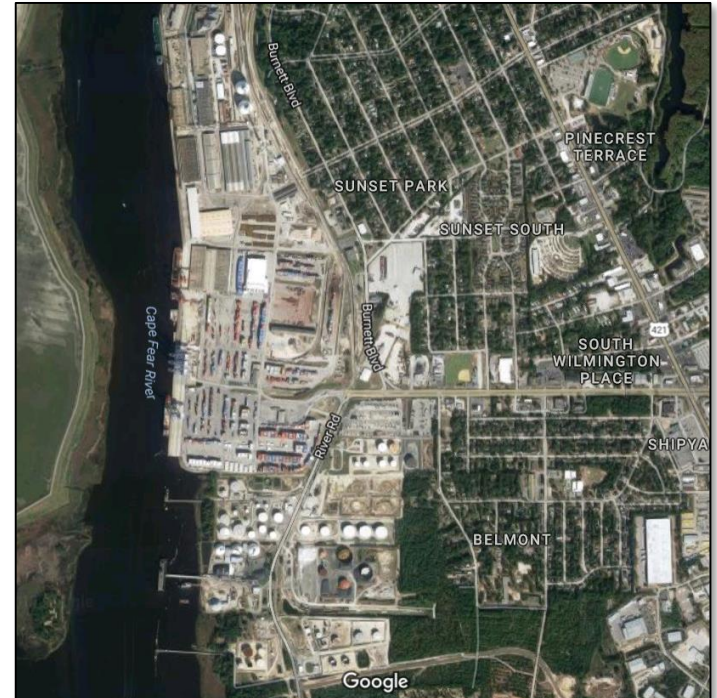




## Port of Morehead City

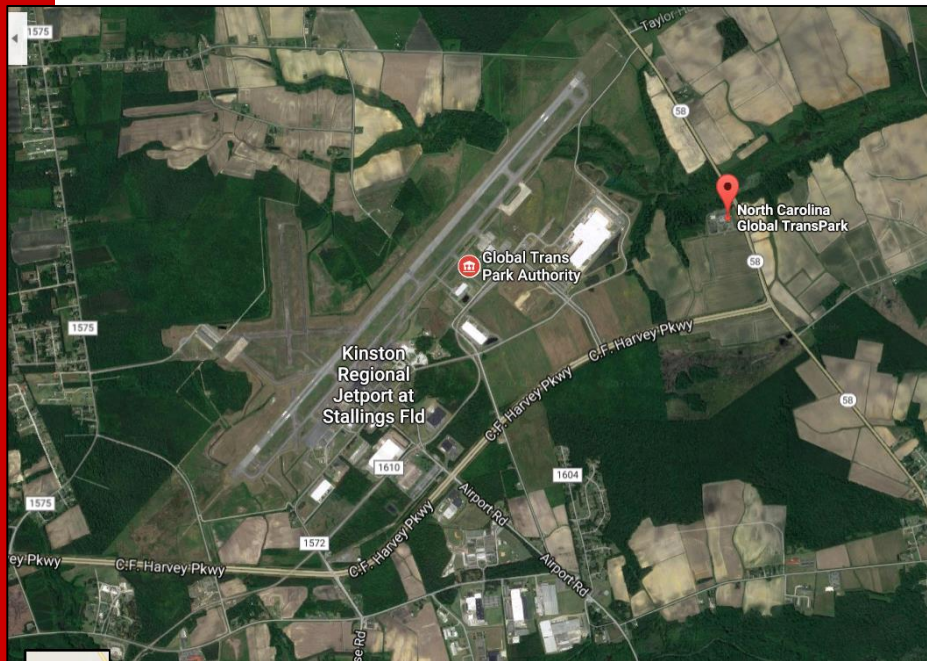


## Port of Wilmington





## Global Transpark Kinston

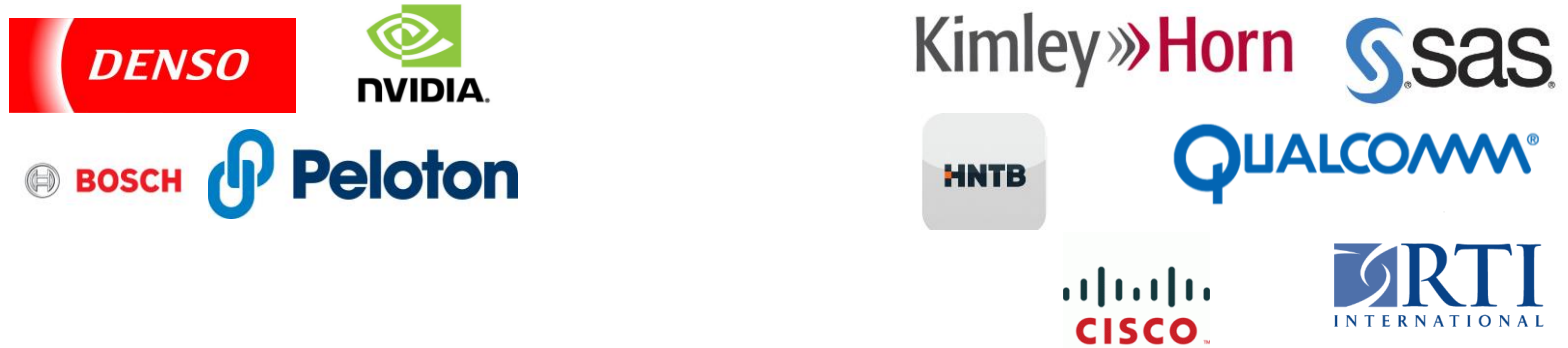


## Military Bases Camp Lejeune, Fort Bragg, etc.



# NC CAV Consortium

## Pillar 4: Public Private Partnership (P3)



## Pillar 5: Tech. Transfer and Training

- Support policy decisions
- Assist local agencies and industry in deployment
- Community college system

# Questions?



Chris Cunningham, PE  
cmcunnin@ncsu.edu  
(919) 515-8562



Thomas Chase  
rtchase@ncsu.edu  
(919) 515-8625